Turning heat waste into electricity

U physics professor Orest Symko talks about a device he developed which can convert sound into heat.

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A U professor has developed a new acoustic heat engine he says may be able to harness waste heat from power plants to generate massive amounts of electricity.

Orest Symko, a professor in the physics department, demonstrated how the device works and talked about the need for this technology as part of the Frontiers of Science lecture series.

Symko said radars, power plants, satellites and computers are producing a growing and problematic amount of waste heat. He said the new device could harness this unused energy.

"Somehow, you have to get rid of the (waste) heat," Symko said. "We claim we know how to do it."

The device was developed as part of a heat-sound-electricity conversion research project funded by the U.S. Department of Defense. The U.S. Army is seeking new ways to cool military radars and produce a portable electricity source to operate electronic devices on the battlefield, Symko said.

This technology is not only revolutionary in terms of its concept and uses, but is also cost-effective and fairly simple, he said.

"It has no moving parts," Symko said. "It is a very simple device."

The first step -- the focus of Symko's research -- is to convert heat, which is naturally chaotic and random in motion, into one frequency of sound.

Once the heat is converted, a second pre-existing device converts the sound into electricity by changing pressure from the sound waves into an electrical current.

The project has received $2 million over the last two-and-a-half years. Symko said he hopes the project will grow, leading to other applications of the research, including using the technology to cool electronic devices such as computers.

Symko's lecture drew students, professors and community members.

"It was really interesting. You don't usually think of sound making electricity," said Chris Valenti, a senior in Spanish and chemistry who attended the event. "(Symko) makes it seem as if he discovered it nonchalantly, as if he was just playing around."

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